

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO**

BNSF RAILWAY COMPANY,

Plaintiff,

CIVIL NO. 06-1076 MCA/LFG

vs.

LAFARGE SOUTHWEST, INC.; STELLA
R. VALENCIA, Personal Representative of the
Estate of Robert J. Valencia; and GREGORY
MARTINEZ and DARLENE COLEMAN,
Personal Representatives of the Estate of
Carol E. Duran,

Defendants.

=====

STELLA R. VALENCIA, individually, and as
Personal Representative of the Estate of Robert J.
Valencia, JOHN KELLY VALENCIA, DESIREE
RICHELLE VALENCIA, STEPHANIE ESTELLE
VALENCIA, and LILLIAN S. VALENCIA,

Counter Claimants/Cross-Claimants/
Third-Party Plaintiffs,

vs.

BNSF RAILWAY COMPANY, and DARLENE
COLEMAN, Personal Representative of the
Estate of Carol E. Duran,

Counter-Defendants/Cross-Defendants,

MIKE TAFT, d/b/a Taft Construction;
and EL PASO NATURAL GAS COMPANY

Third-Party Defendants.

=====

LAFARGE SOUTHWEST, INC.

Third-Party Plaintiff/Cross-Plaintiff

vs.

DARLENE COLEMAN, individually, and as Personal Representative of the Estate of Carol E. Duran; GREG GUTIERREZ and MATTHEW RAY DURAN, individually,

Plaintiffs,

vs.

BNSF RAILWAY COMPANY; LAFARGE SOUTHWEST, INC.; STELLA VALENCIA, Personal Representative of the Estate of Robert J. Valencia; MIKE TAFT, d/b/a Taft Construction; and EL PASO NATURAL GAS CO.,

Defendants.

MEMORANDUM OPINION AND ORDER

THIS MATTER comes before the Court on *The Duran Parties' Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert* [Doc. 518], and *The Duran Parties' Motion in Limine to Exclude the Proposed Video Re-Enactments Prepared by BNSF Railway Co.'s Expert Brian Charles as Inadmissible Under the Rules of Evidence and Daubert* [Doc. 521], both of which were filed November 10, 2008. Having considered the parties' submissions, the relevant law, and otherwise being fully advised in the premises, the Court grants in part and denies in part the Duran parties' motion in limine to exclude Brian Charles' opinions, and denies their motion

in limine to exclude the videos.

I. BACKGROUND

This action arises from a fatal collision between an eastbound freight train operated by Plaintiff BNSF Railway Company (through its engineer, Marlin Ray, and its conductor, Brian Owens) and a commercial dump truck that was being driven by decedent Carol Duran. On November 1, 2006, Ms. Duran, a contractor for Defendant/Third-Party Plaintiff Lafarge Southwest, Inc., was delivering gravel to a construction site adjacent to railroad tracks when, at the apparent direction of her supervisor, Lafarge employee and decedent Robert Valencia, she stopped her truck on a crossing on the tracks in order to speak with him. Both Ms. Duran, who was not wearing her seatbelt at the time of the accident, and Mr. Valencia were killed as a result of the train colliding with Ms. Duran's fully loaded truck. The accident occurred at approximately 7:30 a.m., in sunny conditions. It is undisputed that the train had its bright headlight and ditch lights on, and would also have been front-lit by the eastern sun. [Doc. 367 at 9; Doc. 415 at 8]. Despite the shining sun, however, Conductor Owens was wearing clear-lens safety glasses rather than tinted sunglasses.

Eastbound trains, such as the one involved in this accident, negotiate a series of curves in the final miles leading to the crossing at which Ms. Duran and Mr. Valencia were struck. The last of these curves is a left-hand curve approximately 4,000 feet west of the crossing. There is an escarpment at this final curve, but once the escarpment is passed and the final curve negotiated, the stretch of track between this point (4,000 feet west of the crossing) and the actual crossing is straight, and the view between the two points unobstructed. A whistle

board (a sign with a black “W” to alert the train crew to activate the whistle) sits 1,320 feet (one-quarter of a mile) west of the crossing. It is highly contested whether Ms. Duran’s truck was already on the crossing at the time the train cleared the escarpment (the Duran parties’ position), or whether she came upon the crossing when the train was already past the escarpment and either at or in the area of the whistle board (BNSF’s position).

On November 6, 2007, Brian Charles, BNSF’s accident reconstructionist and proposed expert witness, went to the scene to conduct what he has called “an experiment to allow [him] to look at the visibility issues.” [Doc. 559; Exh. A, Charles depo. at 81]. In preparing for his experiment, Mr. Charles spent approximately 40 hours constructing a right-side profile, destructible mock-up of Ms. Duran’s truck, on three-quarter inch insulation board. Mr. Charles obtained the truck specifications from its manufacturer, Freightliner, based on the VIN of Ms. Duran’s actual vehicle, and also took his own measurements of the truck’s remains. The specifications and Mr. Charles measurements were put into a computer program called AutoCAD, and the mock-up was printed out.

Mr. Charles had the mock-up painted to duplicate the actual coloring of Ms. Duran’s truck, trailer and dump bed, based on photographs of the vehicle, paint chips and Mr. Charles’ own inspection of the debris. Having obtained a piece of the Duran vehicle window glass, Mr. Charles painted the mock-up’s “windows” to simulate tinted windows. Mr. Charles used silver and aluminum paint to duplicate the color of steel parts and chrome on the Duran vehicle, such as door handles and grab bars. The paint he used was all automotive colors. Mr. Charles testified that he was not allowed to use chrome or metal because “[t]he

railroad conveyed . . . that [he] wasn't to have anything . . . that could become a missile. . . .” [Doc. 559; Exh. A, Charles depo. at 80]. Once completed, the mock-up was placed on the crossing, perpendicular to the railroad tracks.

Mr. Charles fitted a Sony TR10 High 8 video camera into the mock-up at driver's eye level and had a rope tied to it, together with a pulley system, in order to pull it immediately before impact and save the recording. Mr. Charles' assistant started the camera on the mock-up at the crossing and then left it on. The point was to provide the visibility from the perspective of a person in Ms. Duran's truck, looking to the west from the crossing.

Mr. Charles also used two cameras onboard and located within the cab of a BNSF locomotive. One camera was set on a tripod in front of the conductor's seat at eye level to record what Mr. Charles understood to be the conductor's view. Mr. Charles held the other camera directly beside the engineer at the engineer's head height. Both cameras were Sony mini DVDs. Mr. Charles instructed the engineer to maintain a speed of 64 miles per hour and to drive through the mock-up.

Mr. Charles turned the two onboard cameras¹ to record when he saw the whistle board. He testified that he made the decision to start recording at the whistle board—as opposed to when the train came around the escarpment approximately 4,000 feet west of the crossing—on the basis of what he had learned from the crew, which is that they first

¹ The camera in the mock-up of Ms. Duran's truck was started as soon as the train began moving. [See Doc. 559; Exh. A at 99-100].

perceived something at the crossing when they were in the area of the whistle board.² Mr. Charles also testified that, because at the time of his experiment he had no information that Ms. Duran's truck was on the tracks when the train came around the escarpment, he opted not to begin recording from the escarpment because such a recording "would not [have been] representative of the information that [he] had as a reconstructionist at that time." [Doc. 559; Exh. A, Charles depo. at 112]. Mr. Charles conducted his experiment at approximately 8:10 or 8:15 a.m. on November 6, 2007.

Following the experiment Mr. Charles created three videos, depicting the conductor's view; the engineer's view; and the view from the mock-up of Ms. Duran's dump truck. These videos have been provided to the Court in the form of a DVD.³ The Duran parties (and, by virtue of their *Second Notice of Joinder*,⁴ the Valencia parties) now move to exclude all three videos. [See generally Doc. 521]. In a separate motion, the Duran and Valencia parties move to exclude a number of Brian Charles' opinions on grounds that (1) he is unqualified to testify as to them, and (2) his opinions are unreliable. [See generally Doc. 518]. The Court addresses these motions in reverse order.

² [See Doc. 559; Exh. F, depo. of Marlin Ray at 87 ("Q: [W]here was the train at in relation to the crossing when you first saw that there was a—some object in the crossing? A: Right past the whistle board at some time, around the whistle board, maybe right when I got past it.")].

³ The three DVD clips are titled "ARA 26066 Conductor View," "ARA 26066 Engineer View," and "ARA 26066 Dump Truck View." [See DVD accompanying Doc. 521].

⁴ [See Doc. 553].

II. ANALYSIS

Rule 702 of the Federal Rules of Evidence imposes a special gatekeeping obligation on this Court to ensure that expert testimony is not admitted at trial unless it is both relevant and reliable. See Kumho Tire Co., Ltd. v. Carmichael, 526 U.S. 137, 141 (1999); Daubert v. Merrell-Dow Pharm., Inc., 509 U.S. 579, 592-93 (1993). The relevance of such testimony also must be weighed against “the danger of unfair prejudice, confusion of the issues, or misleading the jury” as well as “considerations of undue delay, waste of time, or needless presentation of cumulative evidence.” Fed.R.Evid. 403. While the Court is not required to consider any particular set of factors or utilize a particular procedure in making such determinations with respect to expert testimony, the Court must make *some* kind of determination on the record in order to demonstrate that it has performed its gatekeeping function. See United States v. Velarde, 214 F.3d 1204, 1209 (10th Cir. 2000); Goebel v. Denver & Rio Grande W. R.R. Co., 215 F.3d 1083, 1088 (10th Cir. 2000). As part of its gatekeeping function, and in addition to determining whether the proposed expert is qualified to offer an opinion, the Court must also determine whether (1) the testimony is based upon sufficient facts or data; (2) the testimony is the product of reliable principles and methods; and (3) the witness has applied the principles and methods reliably to the facts of the case. Reliability under Daubert is determined by looking at whether the reasoning or methodology underlying the testimony is scientifically valid, and relevance is determined by whether that reasoning or methodology properly can be applied to the facts in issue. Smith v. Sears Roebuck and Co., 232 Fed.Appx. 780, 781 (10th Cir. 2007).

A. The Duran Parties' Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert [Doc. 518]

1. Mr. Charles' qualifications

Mr. Charles is a traffic accident reconstructionist who is fully accredited by the Accreditation Commission for Traffic Accident Reconstruction. He graduated from New Mexico State University (NMSU) in 1972 with a degree in psychology. From 1973 until 1977, Mr. Charles was employed as a New Mexico State Police officer, and his principal duties were highway patrol and accident investigation. As a New Mexico State Police officer, Mr. Charles investigated approximately 400 motor vehicle accidents. [See Doc. 363; Exh. A to Charles affidavit].

Since 1977 until the present, Mr. Charles has worked as an accident reconstruction expert and consultant. He has investigated and/or reconstructed over 3,600 motor vehicle accidents. He also served from 1979 until 1983 as a part-time instructor at NMSU, teaching a course in accident investigation and reconstruction. From 1979 until 1981 he took Engineering Mechanics and Physics for Engineers at NMSU. Mr. Charles has attended "Vehicle Accident Reconstruction School" at both the Arizona State University Department of Applied Engineering and the Northwestern University Traffic Institute. He has attended numerous conferences and seminars on topics including but not limited to: the mechanics of heavy duty trucks and truck combinations; engineering dynamics; cause and prevention of passenger car rollovers; and pedestrian/bicycle accident investigation. Mr. Charles is a member of the Southwest Association of Technical Accident Investigators, the National

Association of Professional Accident Reconstruction Specialists, and the Texas Association of Traffic Accident Reconstruction Specialists. He currently works as an associate with Accident Reconstruction & Analysis, a firm in Corpus Christi, Texas. [See Doc. 363; Exh. A to Charles affidavit].

Mr. Charles has investigated 94 vehicle-train accidents. He has taken college-level courses in, among other things, applied vehicle dynamics (including occupant motion in crashes) and human-factors engineering. Mr. Charles states that he has “extensive experience” in calculating changes in velocity of vehicles and vehicle occupants (Delta V) in accident investigations and reconstructions, and has applied that experience in “thousands of investigations.” [Doc. 557; Exh. A, Charles affidavit at 3]. He is trained in and has been qualified as an expert witness in the physics of motion for a vehicle occupant, from the accident-reconstruction—as opposed to biomechanical—perspective. He frequently testifies regarding the manner in which unbelted occupants move inside a vehicle during a crash, and has analyzed hundreds of vehicle crashes where occupant movement relative to crash force is relevant. [Id.].

Mr. Charles has received training in forensic photography, including still and video photography. He has taught photography in accident-reconstruction classes and regularly uses photography as part of his accident investigations. Mr. Charles also is familiar with, has performed research on, and has provided opinions relating to: physical measurements; visibility issues and the effect of conditions such as light, haze, vegetation, and physical obstructions on a driver’s ability to perceive vehicles (including trains); and conspicuity and

perception of colors as related to accident investigations (including vehicle colors, background, and terrain features). [Doc. 557; Exh. A, Charles affidavit at 4-5]. Mr. Charles employs forensic mapping to form opinions as to the nature, characteristics, slope, grade, and features of roadways and railroad-highway grade crossings as related to the ability of a driver to see oncoming traffic, safely stop a vehicle, and/or safely navigate the intersection or crossing. According to Mr. Charles, he

routinely testifies about how an object such as a vehicle (with occupants) or pedestrian under the extant lighting and background conditions could be perceived and reacted to or could perceive and react, what a person in the position of the operator of a vehicle could have observed or could or could not have done to cause or avoid an accident.

[Id. at 5].

Mr. Charles has experience in developing information about “crash pulse” (the duration of a collision or over what period of time a crash occurs). The areas of crash pulse; relative size, weight, and speed of vehicles; and the angle at which vehicles’ paths intersect, are within Mr. Charles’ knowledge, education, and training. As an accident reconstructionist, Mr. Charles has researched driver-perception issues related to sight and sound, and driver detection and reaction to sight and sound. In his work, he puts to use expertise in evaluating the process of motorist recognition and reaction to noise, sounds, the direction of sounds, and visual cues. [Doc. 557; Exh. A, Charles affidavit at 5-6]. Mr. Charles has provided expert opinions in state and federal courts in Arizona, New Mexico, and Texas, in approximately 159 trials and 350 depositions. [Doc. 557 at 4-5].

On the basis of the foregoing, the Court concludes that Mr. Charles qualifies by education, training, and experience as an expert in the field of accident reconstruction.

2. Charles opinions sought to be excluded

a. Any testimony about the videos he created

According to the Duran parties, Mr. Charles should be prohibited from testifying about the videos because “[a]ny [such] testimony . . . would be misleading, doctored testimony.” [Doc. 518 at 7]. They also assert that “Mr. Charles deleted video footage prior to the crossing and did not give the trier of fact the opportunity to see what is there to be seen.” [Id.].

The Duran parties’ challenge to these videos is the subject of a separate and more extensive motion in limine. For this reason, the Court discusses this challenge below in Section II.B., which is devoted to *The Duran Parties’ Motion in Limine to Exclude the Proposed Video Re-Enactments Prepared by BNSF Railway Co.’s Expert Brian Charles as Inadmissible Under the Rules of Evidence and Daubert*.

b. Opinion that “traffic utilizing the private crossing and specifically dump truck traffic can safely stop at the stop sign on both sides of the crossing”

The Duran parties have sought to exclude Mr. Charles’ opinion that

traffic utilizing the private crossing and specifically dump truck traffic can safely stop at the stop sign on both sides of the crossing. The grade and condition of the road were such so as to deter the commercial driver from stopping. This was confirmed by Mr. Ortiz’s statement and deposition.

[Doc. 518 at 7].

As an initial matter, the Court notes that the pertinent quoted section of Mr. Charles' report says that "[t]raffic utilizing the private crossing and specifically dump truck traffic can safely stop at the stop sign on both sides of the crossing. *The grade is not such that it would be an issue to stop on.* This was confirmed by Mr. Ortiz's statement and deposition." [Doc. 518; Exh. C, April 30, 2008 report of Brian Charles at 3 (emphasis added)]. The Duran parties contend that Mr. Charles is not qualified to give this testimony because he is not, among other things, an engineer; an expert in railroad or crossing design; or an expert in the handling, driving, or operation of a heavy truck. [Doc. 518 at 7-8].

While it may be true that Mr. Charles is not an expert in the above-mentioned areas, it also is true that he is an expert in the area of accident reconstruction, which involves the knowledge and application of forensic mapping, as well as providing opinions on the nature, characteristics, slope, grade, and features of, *inter alia*, railroad-highway grade crossings. Furthermore, Mr. Charles has received training in the specific area of the mechanics of heavy duty trucks and truck combinations. [See Doc. 363; Exh. A to Charles affidavit].

In this case, in preparing his expert report, Mr. Charles considered deposition testimony of Gerardo Ortiz,⁵ another commercial truck driver who reached the crossing before Ms. Duran and traveled safely across, as well as a hand-drawn map of the crossing

⁵ Mr. Charles had not received any information regarding Gerardo Ortiz before he conducted his experiment on November 6, 2007. Instead, he received deposition testimony of Mr. Ortiz, as well as a videotaped interview of Mr. Ortiz (which was conducted at the crossing) in the Spring of 2008, before he prepared his April 30, 2008 expert report. [See Doc. 557 at 12, n.6; Exh. C-2; Charles depo. at 107].

and the surrounding area that Mr. Ortiz had prepared. [See Doc. 414; Exh. 3, Ortiz map of March 8, 2008]. Mr. Charles visited the scene a number of times for the purpose of inspection and investigation. He measured the slope and elevation of the crossing, and created a forensic map of the area, using Mr. Ortiz's hand-drawn map as a guide. [See Doc. 414; Exh. 5, Charles forensic map; see also Doc. 557; Exh. C-2, Charles depo. at 253]. Finally, Mr. Charles (1) knew the specifications of Ms. Duran's dump truck, having obtained those specifications directly from the vehicle's manufacturer; (2) took measurements of the truck after having located its remains at a wrecking yard in Los Lunas, New Mexico; and (3) took three pages worth of notes on the truck. [Doc. 557; Exh. C-1, Charles depo. at 53-54].

The Tenth Circuit has stated that accident reconstructionists may testify as to such matters including, but not limited to, vehicle mass; dimensions of vehicles involved in collisions; road surface textures; and operating characteristics of vehicles. Brandt v. French, 638 F.2d 209, 211 (10th Cir. 1981). In this case, the Court concludes that Mr. Charles' opinion that "traffic utilizing the private crossing and specifically dump truck traffic can safely stop at the stop sign on both sides of the crossing" is not beyond his area of expertise and that he is qualified to testify thereto, particularly where he has specialized training in (1) forensic mapping; (2) the characteristics, slope, and feature of railroad-highway grade crossings; and (3) the mechanics of heavy duty trucks and truck combinations. The Court further determines that this testimony is both relevant and—considering the methodology employed and explained above—reliable. Additionally, such testimony will assist the jury.

Accordingly, the Duran parties' motion in limine will be denied on this point.⁶

c. Opinion that Ms. Duran had an "optimum site [sic] distance" from the crossing

The Duran parties next seek to exclude Mr. Charles' opinion that the crossing at which Ms. Duran and Mr. Valencia were struck

has unrestricted visibility both east and west of the crossing. The crossing is also 90 degrees to the rail providing an optimum site [sic] distance. The stop location is also elevated as is the track, affording a dump truck operator such as Ms. Duran an excellent view to the left and right of the vehicle prior to moving onto and across the tracks.

[Doc. 518 at 8]. The Duran parties maintain that Mr. Charles is not qualified to testify as to this opinion because he is not an expert in, among other areas, those related to conspicuity, vision, or eyesight, or the effect of light on the human eye. [*Id.* at 8-9].

As an initial matter, the Court notes that Mr. Charles does, in fact, hold himself out as an expert in conspicuity "[t]o the extent of [his] accident reconstruction experience[,] and similarly holds himself out as an expert in vision "as it relates to accident reconstruction work." [Doc. 557; Exh. C-1, Charles depo. at 5]. Although he does not hold himself out as an expert in the effect of light on the human eye, Mr. Charles testified to "[h]aving an

⁶ The Duran parties also contend that "[t]o the extent that Mr. Charles claims that his opinion is based upon the testimony of Gerardo Ortiz, Mr. Ortiz actually testified to the contrary. Mr. Ortiz did not stop at the stop sign before entering the crossing because of the difficulty and dangerousness of such a stop." [Doc. 518 at 8]. Mr. Ortiz did testify as to the difficulty in stopping before an incline while driving a fully loaded truck. [See Doc. 557; Exh. F at 127]. He also, however, explained that he did not stop because "[Mr. Valencia] was between the tracks and [Mr. Ortiz] saw that there was nothing.[] If [Mr. Valencia] had not been there, [Mr. Ortiz] would have made the stop." [*Id.*; Exh. F at 124]. In any event, Mr. Ortiz's expressed reasons for not stopping do not affect Mr. Charles' qualifications to testify on this point, nor do they change the fact that Mr. Charles' proposed testimony is both relevant and reliable.

understanding of it with [his] work. . . .” [Id.; Exh. C-1, Charles depo. at 7].

The Court further notes that Mr. Charles’ curriculum vitae shows that he has studied human factors engineering (specifically, how to apply principles of human perception and performance in the interaction with the environment and visual displays and machines), as well as perception, physiology, and human performance. [See Doc. 363; Exh. A to Charles affidavit]. Through training and experience, Mr. Charles is familiar with, has researched, and routinely provides opinions on visibility and the effect of conditions such as light, haze, vegetation, and physical obstructions upon a driver’s ability to perceive other traffic (including trains). He also explained that he is familiar with, has researched, and routinely provides opinions on conspicuity and perception of colors, as relates to accident investigations. [Doc. 557; Exh. A at 5]. Courts have accepted expert testimony of qualified accident reconstructionists qualified to opine on such areas as human visual perception and vision. See Ramon v. United States, 2006 WL 381671, at *8 (D.Ariz. 2006).

Mr. Charles based the opinion at issue on his site visits, his forensic mapping of the area, and photographs he took. Again, slope and elevation measurements he took provide a foundation for his conclusion that, because the stop location and track were elevated, Ms. Duran would have had “an excellent view to the left and right of the vehicle prior to moving onto and across the track.” He also explained that “unrestricted visibility means that there’s no vegetation and there’s no terrain feature that precludes anyone sitting at the stop sign for seeing in the distance required to stop, look and move across the crossing to the other side and get clear of the track.” [Doc. 557; Exh. C-2, Charles depo. at 146].

The Court concludes that Mr. Charles is qualified to testify as to the challenged opinions, which are also both relevant and reliable, and that such testimony will assist the jury. The Duran parties' motion in limine will be denied on this point.⁷

d. Opinion that “whether or not Ms. Duran was directed onto the tracks or by her own volition she violated statutes by stopping on the tracks”

The Duran parties move to exclude the statement in Mr. Charles' report that “[w]hether or not Ms. Duran was directed onto the tracks or by her own volition she violated statutes by stopping on the track.” [Doc. 518 at 9]. They maintain that Mr. Charles testified that he does not know whether traffic laws and statutes apply at this crossing and that, in any case, such testimony would be impermissible expert opinion. [*Id.* at 9-10].

In response, BNSF states that Mr. Charles' deposition makes clear that he will not offer at trial any opinions about law or the violation thereof.” Because there appears to be no real issue as to this alleged opinion, the Duran parties' motion in limine on this point will be granted as unopposed.

e. Opinions about Ms. Duran's ability to see the approaching train

The Duran parties here seek to exclude Mr. Charles' opinion that “[t]he window tinting from the inside [of Ms. Duran's truck] . . . would not have diminished the visibility

⁷ The Court does not construe Mr. Charles' proffered testimony as including opinions as to the quality of Ms. Duran's eyesight or as to exactly what she saw. Obviously, such testimony will not be permitted. However, Mr. Charles can opine as to what was available to be seen by a driver in the position of Ms. Duran.

of Ms. Duran regarding the approaching train had she been looking.” [Doc. 518 at 10]. The Duran parties’ challenge is based on the fact that “Mr. Charles is not an expert in conspicuity, vision, or eyesight [nor is he] an expert in the effect of light on the human eye.” [Id.].

The paragraph of Mr. Charles’ expert report addressing the window tinting in Ms. Duran’s truck states as follows:

The Duran dump truck had tinted windows on the side door glass. This tinted glass would greatly diminish if not negate the crew’s ability to see if the cab was occupied. The window tinting from the inside however would not have diminished the visibility of Ms. Duran regarding the approaching train had she been looking.

[Doc. 518; Exh. C, Charles April 30, 2008 report]. BNSF notes that the Duran parties do not seek to exclude Mr. Charles’ opinion that the tinting would have greatly diminished if not negated the train crew’s ability to see if the cab of Ms. Duran’s truck was occupied. [Doc. 557 at 18].

As a preliminary matter, upon a review of the proffered testimony, the Court understands that the focus of Mr. Charles’ testimony concerning the tinted windows is on the matter of the tint, and not on the quality or state or condition of Ms. Duran’s eyesight.

Again, Mr. Charles does, in fact, hold himself out as an expert in conspicuity “[t]o the extent of [his] accident reconstruction experience[,]” and similarly holds himself out as an expert in vision “as it relates to accident reconstruction work.” [Doc. 557; Exh. C-1, Charles depo. at 5]. Although he does not hold himself out as an expert in the effect of light on the human eye, he testified to “hav[ing] an understanding of it with [his] work. . . .” [Doc. 557;

Exh. C-1, Charles depo. at 7]. As previously explained, the Court determines that Mr. Charles has training and experience in the field of vision, as it relates to accident reconstruction.

Additionally, the Court again notes Mr. Charles' studies in the area of human factors engineering (specifically, how to apply principles of human perception and performance in the interaction with the environment and visual displays and machines), as well as perception, and human performance. [See Doc. 363; Exh. A to Charles affidavit].

In this case, Mr. Charles testified that he personally inspected a piece of the tinted window glass that he had obtained from Ms. Duran's dump truck "to determine the effect of the tinting." [Doc. 557; Exh. A, Charles affidavit at 6]. He also conducted his visibility study at approximately the same time of day that the collision occurred. This study provides a foundation for his opinion as to what effect, if any, the window tinting would have had on the ability of a driver in the position of Ms. Duran to see an approaching train.⁸ The Court concludes that Mr. Charles is qualified to testify as to the challenged opinion, which is also both relevant and reliable, because his experience and training in, and knowledge of conspicuity, provide a foundation for him to testify as to what was available to be seen. Because such testimony also will assist the jury, the Duran parties' motion in limine will be denied on this point.

⁸ Again, the Court construes Mr. Charles' proffered testimony as relating to the effect that a window, which has been tinted, would present (by virtue of the tint) to one looking out. The Court does not construe Mr. Charles' testimony as including commentary or opinions as to what Ms. Duran did, in fact, see, or as to the state of her eyesight.

f. Opinions about the train crew's ability to detect the dump truck

Because Mr. Charles is not an engineer, an expert in train handling, an expert in meteorology, weather, or an expert in a host of other fields noted in their motion, the Duran parties seek to exclude his opinion as to the train crew's ability to see Ms. Duran's truck. Specifically, they seek to exclude the following conclusion, as set forth in Mr. Charles' expert report:

Due to the early morning hours of this crash, the position of the Duran dump truck and the approaching eastbound train, the sun and its position played a role in the view available to Ms. Duran, Mr. Valencia and the train crew, Mr. Ray and Mr. Owen. The sun position detracted from the crew's detection of the dump truck on the tracks however the Duran and Valencia view of the approaching train would have been enhanced by the sun shining on the front of the locomotive. There were three other modifying factors regarding the train crew's ability to detect the dump truck. The first involved haze from the previous dump trucks thru the area and the absence of any wind to move the dust. The second was the color of the dump truck, which was a combination of black and dark blue. The third involved the background terrain features in combination with the sun. There is a significant rise of the ground east of the crossing and hill. This placed the dump truck below the light morning horizon.

[Doc. 518; Exh. C, Charles April 30, 2008 report at 3].

In his work as an accident reconstructionist, Mr. Charles has researched and provided opinions related to the effect of such conditions as light, haze, vegetation, terrain, and physical obstructions on a vehicle operator's ability to detect other traffic. [Doc. 557; Exh. A, Charles affidavit at 5]. In this case, he created the mock-up of Ms. Duran's truck on the basis of measurements he took himself, and specifications he received from the vehicle's

manufacturer. He painted the mock-up using automotive paints in the shades of black and blue that he believed most closely resembled the actual truck (the remains of which he personally viewed in a Los Lunas wrecking yard). [See Doc. 557; Exh. C-2, Charles depo. at 208-209]. Mr. Charles consulted the web site for the United States Naval Observatory (www.usno.navy.mil) to ensure that at the time of his experiment, the sun was in the same position it was in on morning of the collision. [See Doc. 557; Exh. C-2, Charles depo. at 120-121]. This research, in addition to the fact that Mr. Charles was present in the front of the locomotive when he created the three videos that are the subject of *The Duran Parties' Motion in Limine to Exclude the Proposed Video Re-Enactments*, provide a foundation for Mr. Charles' opinions about the crew's ability to detect Ms. Duran's dump truck.

The Court concludes that Mr. Charles is qualified to testify as to the challenged opinion, which is both relevant and reliable, and that such testimony will assist the jury. The Duran parties' motion in limine will be denied on this point.

g. All testimony regarding train handling

Noting that Mr. Charles is neither a railroad engineer nor an expert in train handling, the Duran parties next move to exclude the statement in his supplemental expert report that he is "not aware of any railroad operations expert that will say the crew should have applied the brakes at 4,200 feet." [Doc. 518 at 11; see also Exh. E at 3, Charles May 29, 2008 report at 3].

In response, BNSF represents that "Mr. Charles does not purport to provide any opinions about train handling." [Doc. 557 at 18]. To be sure, Mr. Charles has testified that

he is “not a railroad operations expert [and is] not going to be offering any testimony about the crew, you know, the operations of the train.” [*Id.*; Exh. C-2, Charles depo. at 153]. Because there appears to be no real issue as to this alleged opinion, the Duran parties’ motion in limine on this point will be granted as unopposed.

h. All biomechanical testimony contained in his supplemental report

Because Mr. Charles is admittedly not an expert in the field of biomechanics, the Duran parties seek to preclude what they term “opinions that, while presented in the guise of physics, are nothing more than biomechanical testimony. . . .” [Doc. 518 at 12]. Accordingly, the Duran parties seek to exclude testimony regarding the external and internal forces at play on Ms. Duran and Mr. Valencia at the time of the collision, as well as the change in velocity that Ms. Duran’s truck would have sustained. [*Id.*].

Mr. Charles is not an expert in biomechanics, which the Tenth Circuit has defined as ““the study of the action of external and internal forces on the living body, especially on the skeletal system.”” Tuato v. Brown, 85 Fed.Appx. 674, 677 (10th Cir. 2003) (*quoting* RANDOM HOUSE UNABRIDGED DICTIONARY 210 (2d ed.1993)). By contrast, Mr. Charles has acquired, through formal schooling and his work as an accident reconstructionist, expertise in engineering dynamics, theoretical and applied vehicle dynamics, occupant motion in crashes, and physics, which the Tenth Circuit has defined as the “study of energy, motion, materials and basic natural phenomena.” Wylie v. Ford Motor Co., 536 F.2d 306, 308 (10th Cir. 1976).

Mr. Charles has been qualified as an expert witness in the physics of motion for vehicle occupants, and frequently testifies “regarding the manner in which unbelted occupants move inside a vehicle during a crash.” [Doc. 557; Exh. A, Charles affidavit at 3]. To be sure, in Tuato, Mr. Charles ultimately was qualified as an expert to testify on the topics of occupant motion and occupant dynamics. [See id.; Exh. 1 to Charles affidavit at 10].

Mr. Charles is experienced in calculating changes in velocity of vehicles and vehicle occupants (Delta V). As an accident reconstructionist, he is familiar with side-impact studies involving restrained and unrestrained vehicle occupants and pedestrians, and knows what those studies report about the likely effect of side-impact collisions. [See Doc. 518; Exh. E, May 29, 2008 Charles report]. He understands and regularly applies the concept of “crash pulse,” and considers vehicular speed and weight in his work as an accident reconstructionist. [See Doc. 557; Exh. B, Charles depo. at 39-45]. On the basis of this knowledge and experience, Mr. Charles has formed an opinion (as he says, “not . . . from a biomechanical standpoint but from a physics perspective[,]” id.) as to the forces at play during the collision, and the change in velocity that Ms. Duran and Mr. Valencia experienced when struck by the train. [Id.].

The Duran parties do not appear to challenge Mr. Charles’ qualifications as an accident reconstructionist with experience and training in the area of physics. [See Doc. 518 at 6 (listing areas in which Mr. Charles is not an expert)]. While their objections may affect the weight of the evidence, they do not render Mr. Charles’ opinions inadmissible. See Carlisle v. Hitachi Koki U.S.A. Ltd., 2007 WL 1100454, at *3 (W.D.Mo., Apr. 10, 2007)

(denying motion to exclude expert testimony of engineer who lacked background in biomechanics, explaining that “[b]iomechanics and physics/engineering may analyze the same events in different ways, and different factors may be relevant to those fields: this does not mean an opinion rendered under either discipline is unreliable or (more importantly) inadmissible.”).

The Court concludes that Mr. Charles is qualified to testify—from the standpoint of an accident reconstructionist—about the internal and external forces at play on Ms. Duran and Mr. Valencia during the collision, as well as the Delta V they would have experienced. Such testimony also is relevant and reliable and will assist the jury. Accordingly, the Court denies the Duran parties’ motion in limine to the extent they seek to prohibit Mr. Charles from testifying as to his opinion about the relevant Delta V, and the internal and external forces experienced by Ms. Duran and Mr. Valencia.

I. All audiology testimony contained in his supplemental report

The Duran parties have moved to exclude Mr. Charles’ opinions that (1) a commercial driver should not expect to hear a train horn until the train is dangerously close; (2) in this case, there were ample limitations to hearing the horn at any time until one or two seconds before the crash; and (3) Ms. Duran and Mr. Valencia would have experienced background noise that would have drowned out noise (the train’s horn, presumably) coming from other places. [Doc. 518 at 12-13].

Mr. Charles has training and experience in the areas of human factors engineering, human performance, and perception. As an accident reconstructionist, he has researched issues relating to sound and a driver's detection of and reaction to sound, and frequently evaluates the process by which a driver recognizes and reacts to noise, sounds, and the direction of sounds. He also has training in the area of the mechanics of heavy duty trucks and truck combinations. As a New Mexico State Police officer whose primary duties involved highway patrol and accident investigation, Mr. Charles became familiar with state traffic laws and rules, which he continues to apply in his analysis of traffic accidents. Mr. Charles has investigated nearly 100 vehicle-train accidents. [See Doc. 557; Exh. A, Charles affidavit at 2, 6].

In this case, Mr. Charles relied upon § 2.12, Railroad Crossings, of the New Mexico Commercial Driver's License Manual, which states: "Don't expect to hear a train. Because of noise in the cab, you cannot expect to hear a train horn until a train is dangerously close to the crossing." [Doc. 518; Exh. E, Charles May 29, 2008 report at 4]. Mr. Charles intends to testify as to "what commonly occurs with commercial vehicles at railroad crossings and *what a commercial driver has the duty to anticipate*." [Doc. 557 at 21 (emphasis added)]. Other courts have held such testimony permissible by an accident reconstructionist. See Hatten v. Sholl, 2002 WL 236714, at *3-4 (W.D.Va., Feb. 13, 2002) (where individual was killed when he was run over by a reversing tractor trailer, accident reconstructionist was allowed to testify, on the basis of, among other materials, the Virginia Commercial Driver's License Manual, as to the standard of care for backing up tractor rigs, as "it [was] reasonable

for an expert on truck safety and accident reconstruction to look to federal, state, and commercial publications on the subject [of proper backing up].”).

Here, the Court concludes that Mr. Charles is qualified to testify as to what Ms. Duran, as a commercial truck driver, had a duty to anticipate at a railroad crossing, and that the proposed testimony, which is based on sufficient facts and data, is relevant and reliable.

The Court similarly determines that Mr. Charles is qualified to testify as to his opinion that, in this case, “there were ample limitations to hearing the horn”⁹ and that “background noise . . . would drown out noise coming from other places.” [See Doc. 518; Exh. E, Charles May 29, 2008 report at 7; Exh. F, Charles depo. at 3].

Again, Mr. Charles has training and experience in the areas of human factors engineering, human performance, and perception. As an accident reconstructionist, he has researched issues relating to sound and a driver’s detection of and reaction to sound, and frequently evaluates the process by which a driver recognizes and reacts to noise, sounds, and the direction of sounds. He also has training in the area of the mechanics of heavy duty trucks and truck combinations.

Mr. Charles has “done studies on how noisy it is standing outside a truck with the radio going and talking.” [Doc. 518, Exh. F, Charles depo. at 3]. In the instant case, he retrieved the CB radio from the wreckage of Ms. Duran’s truck. The CB radio was in the

⁹ To the extent that Mr. Charles had stated that “[t]here were ample limitations to hearing the horn at anytime *until one or two seconds before the crash*[.]” (emphasis added), BNSF has explained that the “one to two seconds” determination as not intended to be a part of Mr. Charles’ expert opinion and is now “withdrawn, and will not be part of his trial opinions.” [Doc. 557 at 22, n. 11].

“On” position. [Doc. 557; Exh. B, Charles depo. at 92-93]. He did not locate Ms. Duran’s Lafarge radio, but he assumed, from having reviewed the deposition testimony of Lafarge dispatcher Veronica Gurule, that Ms. Duran’s Lafarge radio was on as well. [See id.; see also Exh. H, deposition of Veronica Gurule]. Mr. Charles additionally reviewed the deposition testimony of Gerardo Ortiz, who stated that the noise from his own commercial truck might have prevented him from hearing the train’s horn. [Doc. 557; Exh. F, Ortiz depo. at 142].

Mr. Charles’ opinions about limitations on hearing the horn and the effect of background noise are relevant, and because they are based on his own studies, noted above, “on how noisy it is standing outside a truck with the radio going and talking[,]” [see Doc. 518, Exh. F, Charles depo. at 3], as well as his research into issues relating to driver reaction and perception to sound and his evaluation of the process by which drivers recognize and react to noise, sounds, and the direction of sounds. The Duran parties’ challenges go to the weight of this evidence, not its admissibility. Accordingly, their motion in limine will be denied as to this point.

**j. Opinion regarding how long Carol Duran
and Robert Valencia were on the tracks**

To understand the Duran parties’ final point, it is helpful to have the following background information:

On March 8, 2008, Gerardo Ortiz created a hand-drawn map showing where he and his truck were situated:

--as he saw Ms. Duran and her truck approach the crossing on November 1,

2006 (“Point (1)”);

--when he noticed that Ms. Duran was on the crossing (Point (2)); and

--when he heard the train strike Ms. Duran’s truck (“Point (3)”).

Mr. Ortiz’s depictions of two trucks, labeled “C1” and “C2,” show, respectively, Ms. Duran’s approach to the crossing and her position on the crossing. Mr. Valencia is depicted as an “R” on the tracks. [Doc. 414; Exh. 3, Ortiz drawing of March 8, 2008]. It was on the basis of this hand-drawn map, as well as Mr. Ortiz’s testimony as to the estimated speeds he was traveling over and across the tracks and his distance from the tracks at each of the locations, Points (1), (2), and (3), that Mr. Charles then created his own forensic map of the scene. [Doc. 414; Exh. 5]. The forensic map shows Point (1) as being approximately 75 feet from the tracks; Point (2) as being approximately 160 feet from the tracks; and Point (3) as being approximately 240 feet from the tracks. [See Doc. 414; Exh. 5].

For their final point, the Duran parties seek to exclude Mr. Charles’ opinions as to how long Ms. Duran and Mr. Valencia were on the tracks. They argue that Mr. Charles’ “testimony and opinion are clearly unsound [because he] ignores the specific statements of Mr. Ortiz, the only eyewitness, as to what he saw and when, and proceeds instead to a clearly incorrect, self-serving ‘calculation’ to fit BNSF’s theory[,]” namely, that Ms. Duran and Mr. Valencia were on the tracks for only 21 seconds before they were struck. [See Doc. 518 at 15].

As an initial matter, the Court notes that Mr. Charles does not at all agree—with what was actually counsel’s conclusion—that Ms. Duran was on the tracks for only 21 seconds

when the train hit her. The following exchange took place at Mr. Charles' deposition:

- Q: So from the time Ms. Duran arrives at the crossing to the point of the train hitting her, if you believe the testimony of Mr. Ortiz, it was 21 1/2 seconds, correct?
- A: No. No. See, that's where you're making your mistake.

[Doc. 557; Exh. C-2, Charles depo. at 261-262]. The 21-second figure was based upon counsel's asking Mr. Charles to assume that Mr. Ortiz covered the full distance from Point (1) to Point (3) at a uniform 5 miles per hour.¹⁰ On the basis of this assumed rate of speed, Mr. Charles estimated that Mr. Ortiz would have covered the 75 feet between Point (1) and Point (2) in approximately 10 seconds, since "at 5 miles an hour you're going 7.35 feet per second. . . ." [Doc. 557; Exh. C-2, Charles depo. at 257-258]. Mr. Charles then estimated that, at 5 miles per hour, it would have taken Mr. Ortiz approximately 11 1/2 seconds to travel the 85 feet between Point (2) and Point (3). [*Id.*; Exh. C-2, Charles depo. at 259]. From these assumptions and calculations came *counsel's* conclusion that "from the time Ms. Duran arrive[d] at the crossing to the point of the train hitting her . . . it was 21 1/2 seconds[,] " a conclusion that Mr. Charles called counsel's "mistake." [*Id.*; Exh. C-2, Charles

¹⁰ See Doc. 557; Exh. C-2, Charles depo. at 258-259, 261:

- Q: At Point 1, where Mr. Ortiz says he was talking to Mr. Valencia, how much time elapsed from that point that Mr. Ortiz got to Point 2. . . .?
- A: Okay, again, do you want me to assume 5 miles an hour?
- Q: Five miles an hour.
- ...
- Q: How much time elapses from—
- A: From Position 1 to Position 3?
- Q: Yes.
- A: At 5 miles an hour?
- Q: Yeah.

depo. at 261-262].

There is no support in the record for the assumption that Mr. Ortiz traveled from Point (1) to Point (2) at 5 miles per hour (although he *did* estimate that he drove at a rate of about 5 miles per hour between Point (2) and Point (3)). When questioned about the speed at which he was moving at Point (1), which is where he was when he saw Ms. Duran approaching, Mr. Ortiz answered, “[a]bout one mile; very slow.” [Doc. 557; Exh. F, Ortiz depo. at 138]. When next asked, “So you were going slower than you were going when you went over the railroad tracks?” Mr. Ortiz responded, “Yes.” [Id.; Exh. F, Ortiz depo. at 138]. Mr. Ortiz previously had testified to having crossed the actual tracks at a rate of approximately two miles per hour. [Id.; Exh. F, Ortiz depo. at 124, 125].

Mr. Charles testified that “at 5 miles an hour, you’re going 7.35 feet per second. . . .” [Doc. 557; Exh. C-2, Charles depo. at 258]. Thus, at 1 mile an hour, a driver would travel approximately 1.47 feet per second ($7.35 \div 5$). According to Mr. Ortiz, when he looked out his window from Point (2), he saw Ms. Duran “already” at the location he marked on his hand-drawn map as C-2. [Doc. 557; Exh. F, Ortiz depo. at 140]. Position C-2 depicts Ms. Duran’s truck on the railroad tracks. [See Doc. 414; Exh. 3]. The Duran parties have calculated that “[t]o cross the 75 feet between ‘Point 1’ and ‘Point 2’ at that speed [1 mile per hour], which equates to 1.467 feet per second, would take approximately 51 seconds.” [Doc. 518 at 15].

As an accident reconstructionist with more than 30 years’ experience in the field, Mr. Charles “routinely provide[s] opinions related to physical measurements. . . .” [Doc. 557;

Exh. A, Charles affidavit at 5]. He also creates forensic maps, which he did in this case on the basis of his personal scene investigation and survey, as well as his review of Gerardo Ortiz's (1) deposition testimony; (2) videotaped interview; and (3) hand-drawn map. The Duran parties do not appear to challenge Mr. Charles' qualifications as an expert in the area of accident reconstruction. They do, however, challenge as unreliable Mr. Charles' calculation as to the amount of time the Carol Duran was on the tracks as the product of his reliance upon "select and inaccurate data." [Doc. 518 at 15].

BNSF submits that Mr. Charles "perform[ed] a time and motion study and testified to the conclusion the Duran vehicle was only on the crossing for approximately 10 seconds, *assuming Ortiz was driving at 5 mph as Ortiz estimated (a slower speed would have resulted in a somewhat longer time)*. [Doc. 557 at 23 (emphasis added)]. But, as previously explained, Mr. Ortiz did not estimate that he drove at a steady rate of 5 miles per hour all the way from Point (1) through to Point (3). Instead, he estimated that he traveled at a rate of 5 miles per hour from Point (2) to Point (3), but at a rate of only 1 mile per hour from Point (1) to Point (2). [See Doc. 557; Exh. F, Ortiz depo. at 138, 140]. A hypothesis may be used for the "purpose of testing the skill, learning or accuracy of the expert, or to test the reasonableness of his opinion, *provided of course that the hypothesis is founded in fact. . .*." Taylor v. Reo Motors, Inc., 275 F.2d 699, 702 (10th Cir. 1960) (emphasis added); see also Atlantic Richfield Co. v. Farm Credit Bank of Wichita, 226 F.3d 1138, 1166-68 (10th Cir. 2000) (holding that district court did not abuse its discretion in excluding expert opinion on fair market value of carbon dioxide where expert "strayed too far from the available sales

data” and “unjustifiably disregarded [certain] sales data. . . .”

Although the Tenth Circuit has commanded “district court[s to] focus on an expert’s methodology rather than the conclusions it generates . . . , an expert’s conclusions are not immune from scrutiny. . . .” Dodge v. Cotter Corp., 328 F.3d 1212, 1222 (10th Cir. 2003). Moreover, “[u]nder Daubert, ‘any step that renders the analysis unreliable . . . renders the expert’s testimony inadmissible. This is true whether the step completely changes a reliable methodology *or merely misapplies that methodology*.’” Mitchell v. Gencorp Inc., 165 F.3d 778, 782 (10th Cir. 1999) (emphasis added) (*quoting* In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 745 (3d Cir.1994)). In this case, it appears that Mr. Charles has misapplied an otherwise reliable and unchallenged methodology (math). Accordingly, to the extent that Mr. Charles intends to testify to a calculation of time that Ms. Duran spent on the railroad tracks on the basis of testimony from Mr. Ortiz that Mr. Ortiz drove from Point (1) to Point (2) at a rate of 5 miles per hour, such testimony is unreliable and will not be permitted. See Fed.R.Evid 702 (allowing expert testimony if, among other things, “the witness has applied the principles and methods reliably to the facts of the case.”); see also S.V. v. Midwest Coast Transport, Inc., 2004 WL 3486464, at *2 (D.Kan., Jan. 2, 2004) (“An expert’s knowledge may be of assistance where properly applied, but if forced into service were it does not ‘fit,’ it may not be helpful at all.”).

Should Mr. Charles rework his calculation on the basis of the actual evidence, he will be permitted to testify as to the amount of time he believes Ms. Duran and Mr. Valencia were on the railroad tracks. He may not, however, testify on the basis of assumptions of counsel

that contradict the testimony of witnesses. The Duran parties' motion in limine will be granted on this point.

B. The Duran Parties' Motion in Limine to Exclude the Proposed Video Re-Enactments Prepared by BNSF Railway Co.'s Expert Brian Charles as Inadmissible Under the Rules of Evidence and Daubert [Doc. 521]

As explained above, on November 2, 2007 at around 8:10 or 8:15 a.m., Mr. Charles recorded a collision between a BNSF locomotive and a mock-up of Ms. Duran's truck from the perspective of (1) the conductor ("ARA 26066 Conductor View"); (2) the engineer ("ARA 26066 Engineer View"); and (3) the driver of the dump truck ("ARA 26066 Dump Truck View").¹¹ Through his deposition, Mr. Charles testified that his intention was not to recreate the November 1, 2006 collision but, instead, to conduct "an experiment to allow [him] to look at the visibility issues." [Doc. 559; Exh. A, Charles depo. at 81].

The Duran parties have moved to exclude all three videos ("ARA 26066 Conductor View," "ARA 26066 Engineer View," and "ARA 26066 Dump Truck View") on grounds that they amount to reenactments that "do not fairly or accurately represent the circumstances surrounding the accident and their probative value is substantially outweighed by undue prejudice to the Duran Parties." [Doc. 521 at 3]. Alternatively, the Duran parties argue that even if the Court were to determine that the videos do not recreate the collision, the videos still should be excluded "because the demonstration is sufficiently close in appearance to the actual accident that the jury could misunderstand its purpose." [*Id.* at 16].

¹¹ In the interest of preserving the recording made from the truck, the camera that had been placed in the truck was pulled away before the collision. "ARA 26066 Dump Truck View" does not, therefore, depict a collision.

The Tenth Circuit has held that

[a]dmissions of evidence of experiments must be established by showing background proof that the experiments were conducted under conditions that were at least similar to those which existed at the time of the accident. Demonstrations of experiments used to merely illustrate the principles in forming an expert opinion do not require strict adherence to the facts. It is important in that situation, however, that it be made clear to the jury that even though there is not similarity to the events of the accident that the information is received on a theoretical basis for the limited purpose for which it is offered. Where photographs, films and slides are used to demonstrate the experiment, care must be used to point out that they are representative only of what the witness is seeking to establish and they must not be misleading in and of themselves.

Brandt, 638 F.2d at 212 (internal citations omitted). In other words, “[t]ests and experiments may be dissimilar from the actual accident if they are meant to illustrate general physical principles rather than re-create the accident.” Montag by Montag v. Honda Motor Co., Ltd., 75 F.3d 1414, 1420 (10th Cir. 1996).

By contrast, reenactments or recreations of “an accident must be conducted under conditions similar to that accident.” Gilbert v. Cosco Inc., 989 F.2d 399, 402 (10th Cir. 1993). Indeed, “[e]xperiments purporting to simulate actual events may be admissible if made under conditions which are substantially similar to those which are the subject of the litigation. While the conditions need not be identical, they must be sufficiently similar to provide a fair comparison.” Four Corners Helicopters, Inc. v. Turbomeca, S.A., 979 F.2d 1434, 1442 (10th Cir. 1992). In commenting on the “new and powerful evidentiary tool” that “[v]ideo animation adds . . . to the trial scene[.]” the Tenth Circuit quoted the distinction

between an “illustrative presentation” and an “impermissible recreation,” as drawn by the United States District Court for the Western District of New York:

[T]he difference [between recreating an accident and re-creating an expert’s theory of the accident] is both real and significant; it is the difference between a jury believing that they are seeing a repeat of the actual event and a jury understanding that they are seeing an illustration of someone else’s opinion of what happened. So long as that distinction is made clear to them . . . there is no reason for them to credit the illustration any more than they credit the underlying opinion.

Robinson v. Missouri Pac. R. Co., 16 F.3d 1083, 1088 n.5 (10th Cir. 1994) (*quoting* Datskow v. Teledyne Continental Motors Aircraft Prods., 826 F.Supp. 677, 686 (W.D.N.Y.1993)).

1. “ARA 26066 Conductor View” and “ARA 26066 Engineer View”

According to Mr. Charles, he did not intend his video as a recreation of the events of November 1, 2006 but, instead, as “an experiment to allow [him] to look at the visibility issues [and] an experiment that [he] was conducting under the same or similar circumstances.” [Doc. 559; Exh. A, Charles depo. at 81]. Among the opinions to which Mr. Charles intends to testify is that

[d]ue to the early morning hours of this crash, the position of the Duran dump truck and the approaching eastbound train, the sun and its position played a role in the view available to Ms. Duran, Mr. Valencia and the train crew, Mr. Ray and Mr. Owen. The sun position detracted from the crew’s detection of the dump truck on the tracks however the Duran and Valencia view of the approaching train would have been enhanced by the sun shining on the front of the locomotive. There were three other modifying factors regarding the train crew’s ability to detect the dump truck. The first involved haze from the previous dump trucks thru the area and the absence of any wind to move the dust. The

second was the color of the dump truck, which was a combination of black and dark blue. The third involved the background terrain features in combination with the sun. There is a significant rise of the ground east of the crossing and hill. This placed the dump truck below the light morning horizon.

[Doc. 518; Exh. C, Charles April 30, 2008 report at 3].

It is BNSF's theory of the case that Ms. Duran's truck would not have been visible to the crew until the crew was right around the area of the whistle board (1,320 feet away from the crossing). [See Doc. 367 at 7-10]. Mr. Charles has formed the opinion that a number of factors—including, but not limited to, the early-morning position of the sun, the black and blue color of Ms. Duran's truck, and the background terrain in combination with the sun—"detracted from the crew's detection of the dump truck on the tracks. . . ." [Doc. 518; Exh. C, Charles April 30, 2008 report at 3]. The video clips "ARA 26066 Conductor View" and "ARA 26066 Engineer View" illustrate the principles (*i.e.*, perception of colors and how background conditions affect an operator's powers of observation) that Mr. Charles considered in forming his expert opinion. See Brandt, 638 F.2d at 212.¹²

Once again, "filmed evidence which is not meant to depict the actual event may be admitted to show mechanical principles, upon a showing that the experiment [was]

¹² The Duran parties object to the fact that "Mr. Charles is not certified in any videography field, forensic videography or otherwise." [Doc. 521 at 10]. However, as part of his training as an accident reconstructionist, Mr. Charles, who regularly uses photography in investigating accidents, has (1) received seminar training in forensic photography (both video and still photography); (2) studied operations manuals and specifications used in the practice of forensic photography and videography; (3) taught photography in accident reconstruction classes; and (4) testified about his photographs and videos "on countless occasions," without ever having one of his videos excluded. [Doc. 557; Exh. A, Charles affidavit at 4]. Thus, to the extent the Duran parties challenge Mr. Charles' qualifications in this area, the Court determines that he qualifies by experience, education, and training to testify as to the challenged videotapes.

conducted under conditions that were at least similar to those which existed at the time of the accident.” Four Corners Helicopters, Inc., 979 F.2d at 1442. Moreover, the visibility or reflectivity of a vehicle has been characterized as a mechanical principle. See S.V., 2004 WL 3486464, at *7.

In this case, Mr. Charles filmed (or taped) his experiment on November 6, 2007, which was 1 year and 5 days after the actual collision. He conducted his experiment at approximately 8:10 or 8:15 a.m., the actual collision having occurred at about 7:30. To ensure that the sun at the time of his experiment was in the same position it was in on the morning of the accident, Mr. Charles consulted the web site for the United States naval Observatory. He designed a mock-up of Carol Duran’s truck (described more fully above) based on his own observations and measurements of the vehicle and the specifications as received from its manufacturer. During the experiment, Mr. Charles personally held one camera next to the engineer’s head to record “ARA 26066 Engineer View,” while he had a railroad supervisor push the “record” button on a second camera that he set up on a tripod in front of the conductor’s seat to record “ARA 26066 Conductor View.” [See Doc. 559; Exh. A, Charles depo. at 90-91, 94]. Mr. Charles instructed the engineer to maintain a speed of 64 miles per hour and to drive through the mock-up.

The Duran parties object to Mr. Charles’ failure to begin recording from the area of the escarpment (approximately 4,000 feet away from the crossing), arguing that a recording that begins at the area of the whistle board (approximately 1,320 feet away from the crossing) “provides an artificially condensed interval for the viewer’s observation [and] does not depict

what could have been seen by the train crew as it came around the curve.” [Doc. 521 at 5]. They also contend that Mr. Charles failed to set his cameras to “the normal view as seen by the human eye.” [Doc. 521 at 9].¹³ However, because “ARA 26066 Conductor View” and “ARA 26066 Engineer View” are intended not as recreations of the accident but as recorded experiments demonstrating the principles on which Mr. Charles relied in forming his expert opinions, they “do not require strict adherence to the facts,” Brandt, 638 F.2d at 212, and also “may be dissimilar from the actual accident. . . .” Montag, 75 F.3d at 1420. This objection (as well as the Duran parties’ objections to Mr. Charles’ failure to (1) record sound (the train’s horn); (2) use a Steadicam; (3) have the engineer place the train in emergency braking; and (4) sufficiently simulate the chrome parts of Ms. Duran’s truck) goes to the weight of the evidence, not its admissibility. See Four Corners Helicopters, Inc., 979 F.2d at 1442 (“Typically, dissimilarities go to the weight of the evidence rather than its admissibility.”).

Finally, the Court does not agree with the Duran parties that the probative value of “ARA 26066 Conductor View” and “ARA 26066 Engineer View” is substantially outweighed by the danger of unfair prejudice. [See Doc. 521 at 3]. However, to counter the potential for unfair prejudice, the Court will instruct the jury as to the limited purpose for which “ARA 26066 Conductor View” and “ARA 26066 Engineer View” are being offered.

¹³ Mr. Charles has disputed this allegation, explaining that he set his cameras to depict a human-eye view. [See Doc. 559; Exh. A, Charles depo. at 170]. The Duran parties’ proposed expert witness, Jerry Goffe, appeared to confirm that Mr. Charles had set his camera to reflect “normal vision,” as set forth in the manufacturer’s specifications. [See id.; Exh. D, Jerry Goffe depo. at 63].

See Brandt, 638 F.2d at 212 (stressing importance of limiting instruction upon admission of evidence of experiments); see also Montag, 75 F.3d at 1420 (although crash test videotape depicting automobile/train collision “repeatedly show[ed] the train’s plow handle striking a dummy’s head, any prejudicial effect was countered by the district court’s limiting instruction and by Plaintiffs’ opportunity for vigorous cross-examination.”)

For the reasons set forth above, the Court concludes that “ARA 26066 Conductor View” and “ARA 26066 Engineer View” are admissible as recorded experiments illustrating the principles that Mr. Charles considered in forming expert opinions on visibility. The Duran parties’ motion in limine to exclude “ARA 26066 Conductor View” and “ARA 26066 Engineer View” will be denied.

b. “ARA 26066 Dump Truck View”

As previously explained, Mr. Charles also placed a camera in the Duran truck mock-up to record the view of the oncoming train from the perspective of a driver. Mr. Charles is of the opinion that while the tinted windows of Ms. Duran’s truck would have “greatly diminish[ed] if not negate[d] the crew’s ability to see if the cab was occupied[, t]he window tinting from the inside . . . would not have diminished the visibility of Ms. Duran regarding the approaching train[,]” and that the position of the sun on the morning of the accident would have actually “enhanced” her view of it. [Doc. 518; Exh. C, Charles report at 3].

For substantially the same reasons the Court concludes that “ARA 26066 Conductor View” and “ARA 26066 Engineer View” are admissible as recorded experiments illustrating the principles that Mr. Charles considered in forming expert opinions on visibility, the Court

concludes that “ARA 26066 Dump Truck View” similarly is admissible. The Duran parties’ objection that “[i]t is especially misleading to record the view of the train from the position of the truck from a point when the train is not visible to when it is visible all the way to the crossing, but to only record the view of the truck from a position determined by the photographer of approximately 1,300 feet prior to the crossing[.]”¹⁴ goes to the weight of the evidence, not its admissibility. See Four Corners Helicopters, Inc., 979 F.2d at 1442 (“Typically, dissimilarities go to the weight of the evidence rather than its admissibility.”).

Alternatively, the Court concludes that “ARA 26066 Dump Truck View” meets the standard of admissibility applicable to reenactments. See Four Corners Helicopters, Inc., 979 F.2d at 1442 (“Experiments purporting to simulate actual events may be admissible if made under conditions which are substantially similar to those which are the subject of the

¹⁴ This is somewhat of a puzzling position to the Court, since the Duran parties’ theory of the case is that

Carol Duran and Robert Valencia were on the tracks at the railroad crossing and there to be seen by the time the BNSF train crew rounded the curve some 4,400 feet before the crossing. The Durans contend that the truck was clearly visible to the train crew with ample time to provide warning, slow and even to stop the train.

[Doc. 521 at 3-4]. Given the Duran parties’ theory that Ms. Duran already occupied the crossing at the time the train cleared the escarpment, “ARA 26066 Dump Truck View” would appear to illustrate their perspective.

Additionally, as with “ARA 26066 Conductor View” and “ARA 26066 Engineer View,” the Court does not agree with the Duran parties that the probative value of “ARA 26066 Dump Truck View” is substantially outweighed by the danger of unfair prejudice. [See Doc. 521 at 3]. Again, to counter any potential unfair prejudice, the Court will instruct the jury as to the limited purpose for which “ARA 26066 Dump Truck View” is being offered. See Brandt, 638 F.2d at 212; see also Montag, 75 F.3d at 1420.

litigation.”).

Mr. Charles constructed a mock-up of Ms. Duran’s dump truck based on (1) his own measurements of the truck; (2) his observation of the truck’s paint scheme; (3) a sample of tinted window glass that he obtained from the truck; and (4) the manufacturer’s specifications. He painted his Styrofoam mock-up with automotive paints to match as closely as he could the actual colors of Ms. Duran’s truck. He painted the “windows” to simulate tinted glass.¹⁵ He used silver and aluminum paint “to simulate the experience of chrome and steel.” [Doc. 559; Exh. A, Charles depo. at 78]. He then placed his mock-up on the crossing, perpendicular to the tracks.

“ARA 26066 Dump Truck View” records the view from the mock-up as the train rounds the escarpment approximately 4,000 feet west of the crossing. The train used in the experiment was traveling at a rate of approximately 64 miles per hour and had its triangle of 1 headlight and 2 ditch lights illuminated, the same as on the day of the accident. [See Doc. 367 at 9; Doc. 415 at 8 (noting as undisputed fact that the train had its bright headlight and ditch lights on, and would also have been front-lit by the eastern sun)]. The front end and windshield of the BNSF locomotive used in the experiment were the same as those of the BNSF locomotive involved in the November 1, 2006 collision. Thus, while BNSF repeatedly insists that Mr. Charles’ videos are not being offered as reenactments or

¹⁵ As explained, Mr. Charles was prevented by BNSF from using for his mock-up glass, metal, or any other material that had the potential to become a missile. [See Doc. 559; Exh. A, Charles depo. at 80].

recreations,¹⁶ the Court agrees with BNSF—at least as pertains to “ARA 26066 Dump Truck View”—that substantial similarities to the actual collision are depicted therein.¹⁷ See Four Corners Helicopters, Inc., 979 F.2d at 1442. The Court will provide the jury with an instruction that identifies the limited purposes for which this evidence may be considered.

III. CONCLUSION

For the reasons stated more fully herein, the Court will grant in part and deny in part *The Duran Parties’ Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert*. The Court will deny *The Duran Parties’ Motion in Limine to Exclude the Proposed Video Re-Enactments Prepared by BNSF Railway Co.’s Expert Brian Charles as Inadmissible Under the Rules of Evidence and Daubert*. As always, these pretrial evidentiary rulings are subject to reconsideration in the event that unforeseen circumstances or a change in context should arise during the trial.

IT IS, THEREFORE, ORDERED that *The Duran Parties’ Motion in Limine to*

¹⁶ [See Doc. 559 at 1 (“The Motion mischaracterizes that BNSF offers the videos as ‘reenactments’ or ‘recreations.’ BNSF does not.”); at 2 (“BNSF does not offer these videos as an accident ‘recreation’ or ‘reenactment’ at all, and instead offers them only for limited purposes, permissible under the Rules of Evidence. . . .”); at 11 (“[G]iven that BNSF does not offer Mr. Charles’ videos as reenactments, Claimants’ charges that the videos ‘do not fairly and accurately represent the events leading up to the accident’ or the ‘circumstances surrounding the accident’ . . . are simply not germane to the question of the videos’ admissibility.”); and at 12 (“Brian Charles’ videos are not meant to depict the actual events of the accident. . . .”).

¹⁷ Of course, because Mr. Charles was prevented from using glass on his mock-up, he could not have absolutely replicated the tinted window of Ms. Duran’s truck. However, the Court nevertheless concludes that substantial similarities exist between “ARA 26066 Dump Truck View,” which records a real-time approach of a train, illuminated in the same manner as was the train on the day of the collision, rounding an escarpment approximately 4,000 feet west of the crossing, and the actual collision. Again, the Court will instruct the jury as to the limited purpose for which this evidence is being offered.

Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert [Doc. 518] is **GRANTED in PART and DENIED in PART**;

IT IS FURTHER ORDERED that *The Duran Parties' Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert* [Doc. 518] is **GRANTED** with respect to the Duran parties' request to preclude Mr. Charles from testifying that Ms. Duran violated statutes by stopping on the track;

IT IS FURTHER ORDERED that *The Duran Parties' Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert* [Doc. 518] is **GRANTED** with respect to the Duran parties' request to preclude Mr. Charles from testifying about train handling;

IT IS FURTHER ORDERED that *The Duran Parties' Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert* [Doc. 518] is **GRANTED** with respect to the Duran parties' request to preclude Mr. Charles from testifying as to the amount of time that Ms. Duran spent on the railroad tracks, where such testimony is based on Gerardo Ortiz's having driven at a rate of 5 miles per hour from what has been described above as Point (1) to Point (2) (and as described further supra);

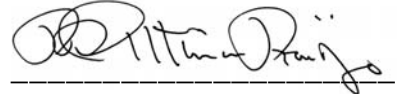
IT IS FURTHER ORDERED that *The Duran Parties' Motion in Limine to Exclude Opinions of Brian Charles as Inadmissible Under the Rules of Evidence and Daubert* [Doc. 518] is otherwise **DENIED**;

IT IS FURTHER ORDERED that *The Duran Parties' Motion in Limine to Exclude the Proposed Video Re-Enactments Prepared by BNSF Railway Co.'s Expert Brian Charles*

as Inadmissible Under the Rules of Evidence and Daubert [Doc. 521] is **DENIED**;

IT IS FURTHER ORDERED that, where appropriate, the Court will instruct the jury as to the limited purpose for which evidence is being offered.

SO ORDERED this 12th day of February, 2009, in Albuquerque, New Mexico.

A handwritten signature in black ink, appearing to read "M. Christina Armijo", is written over a horizontal line.

M. CHRISTINA ARMIJO
United States District Judge